

In the claims:

1. (Currently amended) A seismic sensor for sensing seismic activity, comprising a case; a pre-charged, non-conductive membrane located between two plates that form a capacitor and accommodated inside said case, with one of said plates being immovable relative to said case and the other of said plates being movable relative to said one plate under the action of seismic activity of a medium in which the sensor is located, so that said capacitor produces an electrical signal responsive to the seismic activity, said movable plate being formed as an uninterrupted flexible diaphragm extending transversely over a total transverse cross-section of said case, so that under the action of seismic activity when the sensor moves as a whole said diaphragm oscillates as a whole relative to said immovable plate; and a mass increasing element associated with said movable plate so as to increase mass of said movable diaphragm and therefore enhance oscillations of said movable diaphragm under the action of the seismic activity, said mass increasing element being formed as a lug which is attached to said uninterrupted flexible diaphragm in a center of said uninterrupted flexible diaphragm and is displaceable together with said flexible diaphragm in response to the movement of the sensor as a whole under the action of seismic activity.

Claims 2-3 cancelled.

4. (Original) A seismic sensor as defined in claim 1; and further comprising an electronic unit which is connected with said capacitor.

5. (Original) A seismic sensor as defined in claim 4, wherein said electronic unit including an operational amplifier with high impedance input and a resistance, and a capacitance.

6. (Original) A seismic sensor as defined in claim 1, wherein said case is formed as a double shield for protection from electromagnetic interference.

7. (Original) A seismic sensor as defined in claim 6, wherein said double shield includes one shield composed of copper and another shield composed of nickel.

8. (New) A seismic sensor for sensing seismic activity, comprising a case; a pre-charged, non-conductive membrane located between two plates that form a capacitor and accommodated inside said case, with one of said plates being immovable relative to said case and the

other of said plates being movable relative to said one plate under the action of seismic activity of a medium in which the sensor is located, so that said capacitor produces an electrical signal responsive to the seismic activity, said movable plate being formed as an uninterrupted flexible diaphragm extending transversely over a total transverse cross-section of said case, so that under the action of seismic activity when the sensor moves as a whole said diaphragm oscillates as a whole relative to said immovable plate; and a mass increasing element associated with said movable plate so as to increase mass of said movable diaphragm and therefore enhance oscillations of said movable diaphragm under the action of the seismic activity, said mass increasing element being formed as a lug which is attached to said uninterrupted flexible diaphragm in a center of said uninterrupted flexible diaphragm and is displaceable together with said flexible diaphragm in response to the movement of the sensor as a whole under the action of seismic activity, said lug being formed as a one-piece integral element having a transverse size which is only a fraction of a transverse size of said flexible diaphragm.

9. (New) A seismic sensor as defined in claim 1, wherein said pre-charged non-conductive membranes is composed of electret.